

POWER RELAY

1 POLE—16 A (HEAVY POWER CONTROL) VSB SERIES

■ FEATURES

- All or nothing relay
- UL, CSA, VDE, SEV, FIMKO, SEMKO, IMQ, ÖVE, BSI recognized
- Working class: C
- Type of service: continuous duty
- Heavy duty 16 A miniature power relay
- UL Class B (130°C) insulation
- High isolation in small package
 - Insulation distance: 8 mm
 - Dielectric strength: 5,000 VAC (between coil and contacts)
 - Surge strength: 10,000 V
- Low power consumption and high sensitivity type available (VSB-S)
- Plastic sealed (with tape) type available



■ ORDERING INFORMATION

[Example] $\frac{\text{VSB}}{(a)} - \frac{12}{(*)} \frac{\text{S}}{(b)} \frac{\text{T}}{(c)} \frac{\text{B}}{(d)}$

| | | |
|-----|---------------------|-----------------------------------------------------------|
| (a) | Series Name | VSB: VSB Series |
| (b) | Nominal Voltage | Refer to the COIL DATA CHART |
| (c) | Coil Type | Nil : Standard type S : High sensitivity type |
| (d) | Contact Arrangement | M : 1 form A (SPST-NO) T : 1 form C (SPDT) |
| (e) | Enclosure | B : Flux free type C : Plastic sealed type (with tape) |

Note: Actual marking omits the hyphen (-) of (*)

■ SAFETY STANDARD AND FILE NUMBERS

UL508, 873 (File No. E56140, E108658)

C22.2 No. 14 (File No. LR35579)


VDE0435, 0631, 0700 (File No. 11039-4940-0005/30K)

| Nominal voltage | Contact rating |
|-----------------|-----------------------------------------------------------------------------|
| 3 to 100 VDC | 1/3 HP 125 VAC/250 VAC 16 A 30 VDC/250 VAC resistive Pilot duty C 150 |

■ SPECIFICATIONS

| Item | | Standard Type | High Sensitive Type |
|------------|------------------------------|---------------------------------------|---------------------------------------------------------|
| | | VSB-() | VSB-()-S |
| Contact | Arrangement | 1 form A (SPST-NO) or 1 form C (SPDT) | |
| | Material | Silver alloy | |
| | Style | Single | |
| | Resistance (initial) | Maximum 200 mΩ (at 1 A 6 VDC) | |
| | Rating (resistive) | 16 A 250 VAC/30 VDC | |
| | Maximum Carrying Current | 16 A | |
| | Maximum Switching Power | 4,000 VA, 480 W | |
| | Maximum Switching Voltage | 380 VAC, 150 VDC | |
| | Maximum Switching Current | 16 A | |
| | Minimum Switching Load*1 | 100 mA 5 VDC | |
| Coil | Nominal Power (at 20°C) | 0.7 to 0.75 W | 0.53 W |
| | Nominal Voltage (at 20°C) | 0.35 to 0.37 W | 0.26 W |
| | Operating Temperature | -40°C to +65°C (no frost) | -40°C to +75°C (no frost) |
| Time Value | Operate (at nominal voltage) | Maximum 15 ms | |
| | Release (at nominal voltage) | Maximum 10 ms | |
| Insulation | Resistance (at 500 VDC) | | Minimum 1,000 MΩ |
| | Dielectric Strength | between open contacts | 1,000 VAC 1 minute |
| | | between coil and contacts*2 | 5,000 VAC 1 minute |
| | Surge Strength*3 | | 10,000 V (at 1.2 x 50μs) |
| Life | Mechanical | | 2 × 10 ⁷ operations minimum |
| | Electrical | | 1 × 10 ⁵ operations minimum (contact rating) |
| Other | Vibration Resistance | Misoperation | 10 to 55 Hz (double amplitude of 1.5 mm) |
| | | Endurance | 10 to 55 Hz (double amplitude of 1.5 mm) |
| | Resistance | Misoperation | 100 m/s ² (11 ±1 ms) |
| | | Endurance | 1,000 m/s ² (6 ±1 ms) |
| | Weight | | Approximately 18 g |

*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

*2 IMQ 

*3 IMQ 

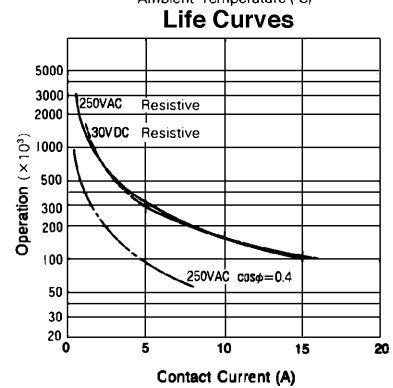
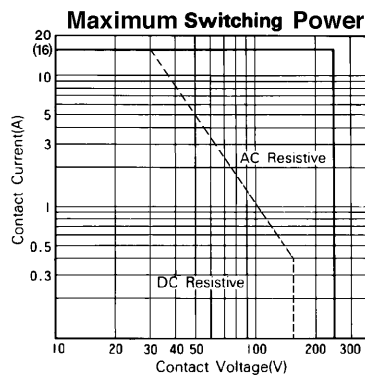
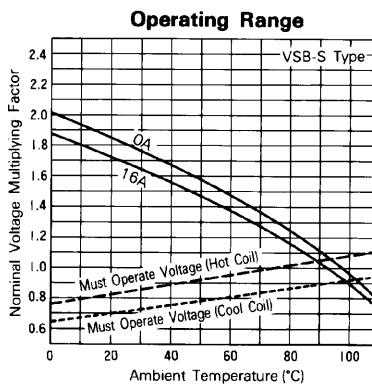
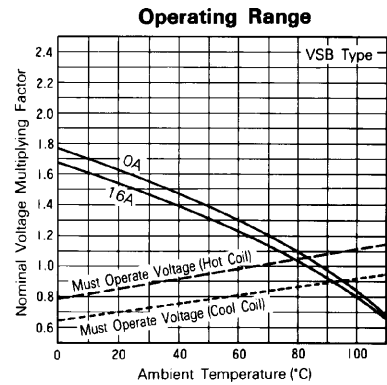
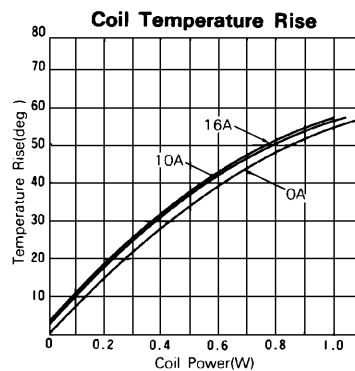
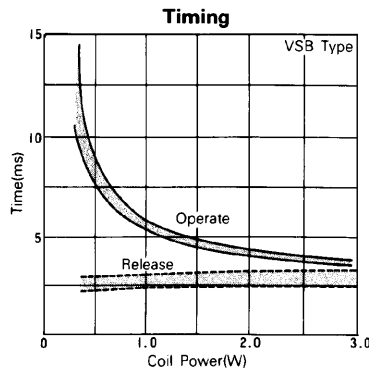
VSB SERIES

■ COIL DATA CHART

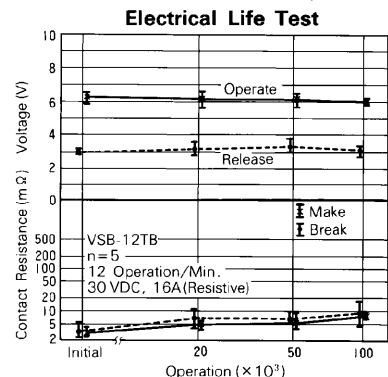
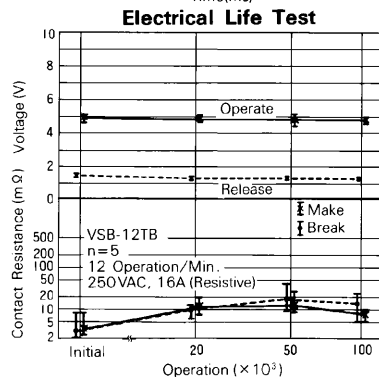
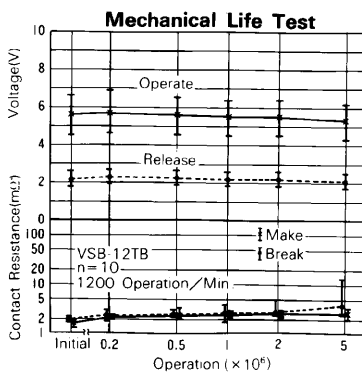
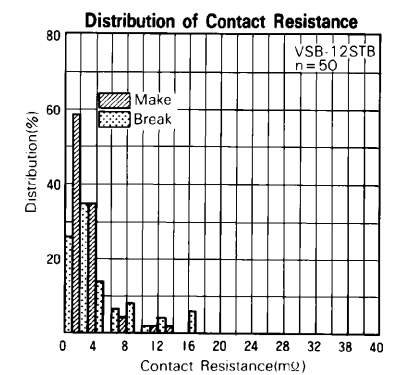
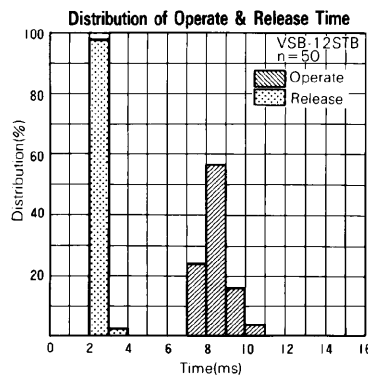
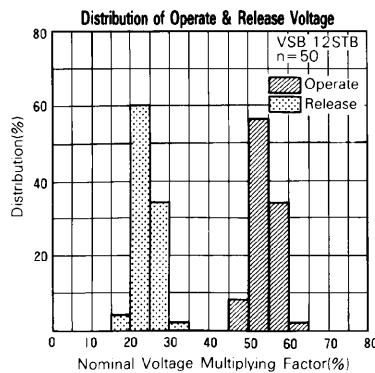
| MODEL | | Nominal voltage | Coil resistance (±10%) | Must operate voltage | Must release voltage | Nominal power |
|-----------------------|------------------|-----------------|------------------------|----------------------|----------------------|---------------|
| Standard Type | VSB- 3 () () | 3 VDC | 12.5 Ω | 2.1 VDC | 0.3 VDC | 0.72 W |
| | VSB- 5 () () | 5 VDC | 36 Ω | 3.5 VDC | 0.5 VDC | 0.70 W |
| | VSB- 6 () () | 6 VDC | 50 Ω | 4.2 VDC | 0.6 VDC | 0.72 W |
| | VSB- 9 () () | 9 VDC | 115 Ω | 6.3 VDC | 0.9 VDC | 0.70 W |
| | VSB- 12 () () | 12 VDC | 200 Ω | 8.4 VDC | 1.2 VDC | 0.72 W |
| | VSB- 14 () () | 14 VDC | 280 Ω | 9.8 VDC | 1.4 VDC | 0.70 W |
| | VSB- 18 () () | 18 VDC | 460 Ω | 12.6 VDC | 1.8 VDC | 0.70 W |
| | VSB- 24 () () | 24 VDC | 820 Ω | 16.8 VDC | 2.4 VDC | 0.70 W |
| | VSB- 36 () () | 36 VDC | 1,850 Ω | 25.2 VDC | 3.6 VDC | 0.70 W |
| | VSB- 48 () () | 48 VDC | 3,300 Ω | 33.6 VDC | 4.8 VDC | 0.70 W |
| | VSB- 60 () () | 60 VDC | 5,100 Ω | 42.0 VDC | 6.0 VDC | 0.70 W |
| | VSB-100 () () | 100 VDC | 13,400 Ω | 70.0 VDC | 10.0 VDC | 0.75 W |
| High Sensitivity Type | VSB- 3S () () | 3 VDC | 17 Ω | 2.1 VDC | 0.3 VDC | 0.53 W |
| | VSB- 5S () () | 5 VDC | 47 Ω | 3.5 VDC | 0.5 VDC | 0.53 W |
| | VSB- 6S () () | 6 VDC | 68 Ω | 4.2 VDC | 0.6 VDC | 0.53 W |
| | VSB- 9S () () | 9 VDC | 155 Ω | 6.3 VDC | 0.9 VDC | 0.53 W |
| | VSB- 12S () () | 12 VDC | 270 Ω | 8.4 VDC | 1.2 VDC | 0.53 W |
| | VSB- 14S () () | 14 VDC | 370 Ω | 9.8 VDC | 1.4 VDC | 0.53 W |
| | VSB- 18S () () | 18 VDC | 610 Ω | 12.6 VDC | 1.8 VDC | 0.53 W |
| | VSB- 24S () () | 24 VDC | 1,100 Ω | 16.8 VDC | 2.4 VDC | 0.53 W |
| | VSB- 36S () () | 36 VDC | 2,450 Ω | 25.2 VDC | 3.6 VDC | 0.53 W |
| | VSB- 48S () () | 48 VDC | 4,400 Ω | 33.6 VDC | 4.8 VDC | 0.53 W |
| | VSB- 60S () () | 60 VDC | 6,800 Ω | 42.0 VDC | 6.0 VDC | 0.53 W |
| | VSB-100S () () | 100 VDC | 18,560 Ω | 70.0 VDC | 10.0 VDC | 0.53 W |

Note: All values in the table are measured at 20°C

CHARACTERISTIC DATA



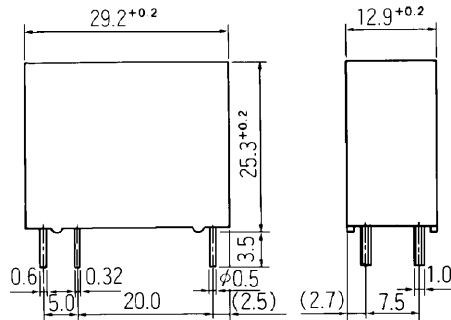
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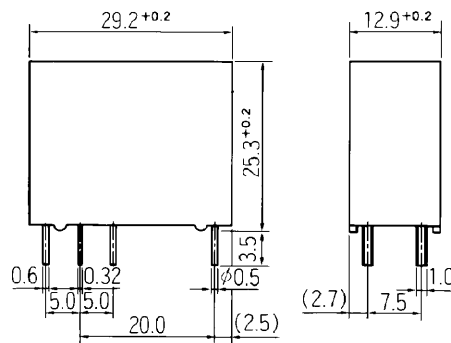
■ DIMENSIONS

● Dimensions

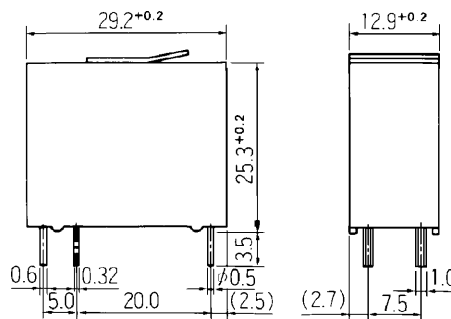
VSB-M type



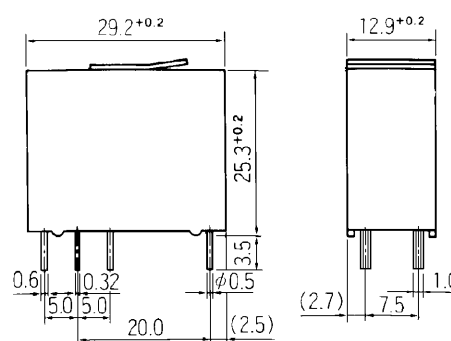
VSB type



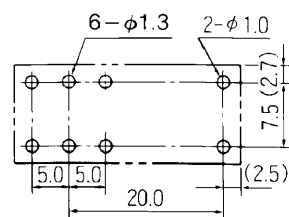
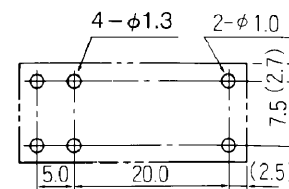
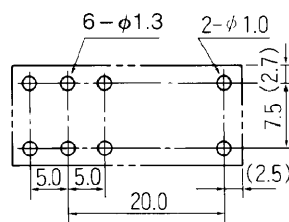
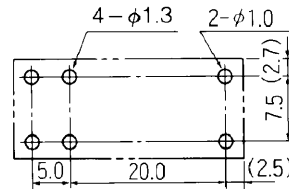
VSB-MC type (Plastic sealed type with tape)



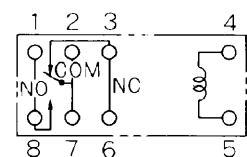
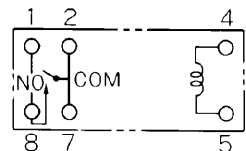
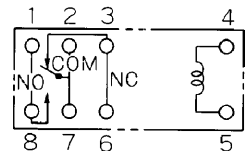
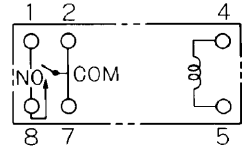
VSB-C type (Plastic sealed type with tape)



● **Schematics**
(BOTTOM VIEW)



● **PC board mounting
hole layout
(BOTTOM VIEW)**



Unit: mm

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